PATENT

Attorney Docket No.: 021331-000710US

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On March 1, 2006

TOWNSEND and TOWNSEND and CREW LLP

By: Andrea Jeffe

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Raymond Wellman et al.

Application No.: 10/765,707

Filed: January 26, 2004

For: SLIP COLLAR

Examiner: Christopher P. Bruenjes

Art Unit: 1772

DECLARATION OF JOSEPH M. PLECNIK PURSUANT TO 37 C.F.R. § 1.132

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I, Joseph M. Plecnik, reside at 1880 San Anseline, Long Beach, CA 90815, and declare as follows:

1. I am presently a professor at Long Beach State University in Long Beach California, and my resume is attached hereto as Exhibit A. As indicated in the attached resume, I have a Ph.D in Structural Engineering from Ohio State University, and I am currently a professor in the Civil Engineering department at California State University at Long Beach California.

2. I am a paid consultant for the assignee of the present application, ATS Products, Inc.

3. I have reviewed the present patent application, as well as the Office Action mailed on October 3, 2005, and U.S. Patent No. 5,961,154 to Williams et al.

4. The slip collar that is described in the present application is a slip collar for joining ducts. The slip collar includes an inner wall portion, an outer wall portion, and an intermediate portion between the inner and outer wall portions. Each of these portions comprises a fiber reinforced plastic material, and the portions form an integral, one-piece structure. The inner wall portion, the outer wall portion, and the intermediate portion can form slot regions. When the slip collar is used to join two ducts together, the ends of the ducts can be inserted into the slot regions. An adhesive may be present in the slot regions so that a fluid tight seal is formed between the ducts and the slip collar. The formed duct joint is very strong.

5. I believe that the slip collar that is described in the present application has a number of advantages. Some advantages are provided at paragraph [0027] of the present application. Paragraph [0027] states:

> The slip collars according to embodiments of the invention are especially useful for joining ducts. As explained below, in preferred embodiments of the invention, an adhesive composition can be deposited in the first and second slot regions, and two sections of duct can be joined quickly and accurately, without the need for extensive aligning of the duct sections. Thus, slip collars according to embodiments of the invention can be used to "self-align" two adjacent duct sections. In addition, the joint that is formed between connected duct sections is strong and can have fire resistance and chemical resistance. The slip collars include both inner and outer wall portions. They provide [for better] joint strength and for a better barrier for fumes than slip collars that are made from only a single layer of material. For example, in order for a gas inside of a duct assembly to leak from the interior to the exterior, a gas would have to traverse through the two wall portions of the slip collar and the walls of the duct sections that are being joined. Also, by using the slip collars according to embodiments of the invention, ductwork can be installed quickly and accurately. A duct network that is formed using the slip collars according to embodiments of the invention will be strong and reliable. Although slip collars for ducts are described in detail, embodiments of the invention may be used to join other types of tubular articles such as two sections of pipe.

I believe that these advantages make the slip collar described in the present application better than the duct joint described in Williams et al. Further advantages of the slip collar described in the present application over the duct joint described in Williams et al. are provided below.

6. I believe that it takes less time to assemble ducts using the slip collar described in the present application, than the duct joint described in Williams et al. To join two duct sections together in Williams et al., slip collar 60, as shown in FIG. 4 of the Williams et al. patent, is coated with an adhesive. As shown in FIG. 5 of the Williams et al. patent, the duct sections are then joined to the adhesively coated slip collar 60. A sealant 84 is then coated on the joined duct sections. Once joined, outer clamp portions 22, 24 are assembled around the slip collar 60 using bolts 50 (see FIG. 5). It is apparent that the process described in Williams et al. uses at least six separate process steps. Compared to the Williams et al. process which uses at least six process steps to form a duct joint, the slip collar that is described in the present application can use three or four process steps to form a duct joint. The slip collar that is described in the present patent application is a one-piece structure. The one-piece structure has slot regions and these regions can be coated with an adhesive. Once surfaces of the slip collar defining the slot region are coated, the two duct sections are inserted into the slot regions. Optional set screws may be used to secure the slip collar to the joined duct sections. Thus, the slip collar that is described in the present application can be used to form a joint more quickly than the components described in Williams et al. Consequently, significant amounts of time, labor, and money can be saved using the slip collar that is described in the present application, as compared to the duct joint that is described in Williams et al.

7. The resulting duct joint that is formed when using the slip collar described in the present application is stronger than the duct joint that is formed in Williams et al. Duct joints are often the weakest points of any duct system, and it is desirable to make sure that these weak points are as strong as possible. The duct joint described in Williams et al. has multiple parts including an inner slip collar 60 and outer clamp portions which are joined by bolts 50 and adhesive layers. The regions where these multiple parts are joined can potentially fail. In comparison, the slip collar that is described in the present application is a one-piece structure and does not have joining regions like those described in Williams et al. I believe

that the slip collar that is described in the present application is stronger and is less prone to failure than the duct joint described in Williams et al.

8. In summary, I believe that the slip collar that is described in the present application is not shown or suggested by Williams et al., and that the slip collar that is described in the present application has a number of advantages over the duct joint that is described in Williams et al.

9. I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the above-referenced application or any patent issuing thereon.

Joseph Plecnik

Joseph Plecnik, Ph.D.

2/21/2006

Date

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BEST A

EXHIBIT A

RESUME

Joseph M. Plecnik
Professor at Long Beach State University
Director, Structures Laboratory
1880 San Anseline
Long Beach, CA 90815
(562) 598-0617

Personal Information:

Citizen: U.S.A.
Married with five children

Education: (1964-1974)

Bachelor of Engineering: Youngstown State University, (1969)
Master of Science (Structural Engineering); Ohio State University (1970)

Ph.D. (Structural Engineering); Ohio State University (1974)
Additional coursework and research at University of Maryland, Catholic University of America, and George Washington University, all located in Washington, D.C. area (1971-1972).

Major: Structural Engineering. Research during Ph.D. program centered on application of computer optimization techniques to engineering problems. M.S. and B.S. theses discussed experimental and theoretical analysis of concrete slabs.

Minors: Mathematics, Engineering Mechanics, and Optimization Techniques.

Military Service: (1970-1972)
Drafted into U.S. Army and assigned to research and development as an assistant engineer at USAMERDC, Ft. Belvoir, Virginia.

Teaching Experience: (1973-Present)

1973-1981, Associate Professor in Civil Engineering at California State University, Long Beach. Courses taught include Statics, Structural Analysis, Steel Design, Advanced Steel Design, Concrete Design, Structures Laboratory, Finite Element Methods, Directed Studies (Thesis), and Laboratory Techniques.

1981-1985, Associate Professor in Civil Engineering at North Carolina State University

1985-Present, Professor in Civil Engineering at California State University, Long Beach

Consulting and Job Experience (1974-Present)

See also Major Industrial Reports enclosed after Government Reports.

1970-1972, Assistant Engineer, U.S. Army, Ft. Belvoir, Va.

1973-Present, Consultant to numerous corporations including the following within the last 5 years in composites or related subjects.

Xerxes Corp., Minneapolis, MN. Composite Structures; design, analysis and testing.

Owens Corning Fiberglass, Toledo, Ohio. Fiberglass (FRP) mechanical property evaluations.

Koppers Co., Pittsburgh, Pa. Fiberglass experimental testing.

Northrop Corp., Los Angeles, CA. Design of FRP vessels.

Arizona Public Power Services, Phoenix, AZ. Composite materials testing and design.

Tankinetics Inc., Harrison, AK Composite structures, design analysis and testing.

Viron International, Owasa, MI. FRP; design analysis and testing.

Commercial Fiberglass, Compton, CA. FRP; design analysis and testing.

MFG, Astabula, Ohio. Design of composite Radomes for military.

Nova Group, Nappa, CA. FRP product development.

Hicks Industrial Fiberglass, Westminster, CA. FRP product development.

Advanced Composites Product and Technology, Huntington Beach, CA. Composites testing and development.

American Fiberglass, Phoenix, AZ. FRP; design analysis and testing.

Ameron, Brea, CA. FRP pipe design and testing.

Beetle Plastics, Ardmore, OK. FRP design and analysis.

Composite Engineering, Corona, CA. FRP design analysis and testing.

Cal Bio Chem, San Diego, CA. FRP product design.

FiberFab, Phoenix, AZ. FRP; design analysis and testing.

Pfizer, Inc. and Shiley Labs., Irvine, CA. Experimental and finite element studies of human heart valves.

Parabam Inc. Los Angeles, CA. Design of radomes for U.S. Air Force.

Quaney Engineering, Inc., Irvine, CA. Consulting on ABS and PVC structural plastics.

Shell Oil Co., Houston, Texas. Experimental and analytical investigations of large diameter epoxy fiberglass pipe.

Global Marine Development, Inc. and TRW, Redondo Beach, CA. Development of design specifications for epoxy-polyester fiberglass equipment for ocean environments.

Cal Dyn, Inc., Los Angeles, CA. Design of butyl seismic isolators for mechanical equipment in structures.

Fluor Engineers and Constructors, Irvine, CA. Experimental and analytical investigations of seismic bolted connections on the Alaskan Pipeline, (1975-1976).

Inspection and certification of underground gasoline storage tanks for the fiberglass industry.

AWARDS AND HONORS

Chosen as featured speaker for various groups including Structural Engineers Association of California (SEAOC) and International Conference of Building Officials (ICBO). (1979-1980)

Commendation from U.S. Army for work done on lightweight mobile military bridges at USAMEDC, Ft. Belvoir, Virginia. (1971)

All graduate work supported by NSF Fellowship.

Winner of Deesz Award as the outstanding engineering student of 1969 Youngstown State University. Chosen Outstanding Engineering Faculty of 1975 by Associated Engineering Student Body at California State University, Long Beach.

Sponsored University Research

1) J.M. Plecnik, Principal Investigator, NSF Grant Dealing with Epoxy Research for Repair of Masonry and Concrete Structures, 1975-1976, $17,000.

2) J.M. Plecnik, "Mechanical Properties of Composites", Xerxes Corp., Anaheim, CA., 1981-1986 $120,000

3) J.M. Plecnik and M.G. Pham, Principal Investigators, Experimental Studies of the Mechanical Properties of Fiberglass Pipes, Dart Industries, 1978, $15,000.

4) J.M. Plecnik, Principal Investigator, NSF Grant titled "Fire Research on Epoxy Repair Concrete Structures (Shear Walls)", 1978-June 1980), $95,000.

5) J.M. Plecnik, "Fire Research on Seismically Damaged Concrete Beams Repaired with Epoxy Adhesives", NSF Contract No. PFR- 7927222, 1979-1981, $136,000.

6) J.M. Plecnik, "Improvement of Low Quality Masonry, Phase I", NSF Contract No. Cee-8219343, 1982-1983, $30,000.

7) J.M. Plecnik , "Fiberglass Tanker Truck for MC312 Requirements", Sponsored by Composite Engineering, Westminster, CA., 1983, $20,000.

8) J.M. Plecnik, "New Technique for Strengthening of Unreinforced Masonry Buildings for Seismic Loading", NSF Contract No. Cee- 8211240, 1983-1985, $154,000.

9) J.M. Plecnik and S.H. Ahmad, "Transfer of Composite Technology to Design and Construction of Bridges", U.S. Dept. of Transportation, Contract No. DTRS 5683-C00043, 1984-1987, $604,900.

10) J.M. Plecnik, and J.K. Rao, "Reinforcing Existing Unreinforced Masonry Wall Buildings, Phase II", NSF Contract No. ECE 8610950, 1987-1989, $145,000.

11) J.M. Plecnik, "Adaptation of Composite Materials to Infrastructure Applications", NSF Contract No. CES 8714562, 1988-1990, $200,000.

12) J.M. Plecnik, "Analysis, Design, Fabrication and Testing of Large Deck Panels," USDOT Contract No. DTO S59-88-C-00041, 1988-1990, $200,000.

13) J.M. Plecnik, "Tool Modeling for Automated Composite Manufacturing of Spacecraft," TRW-US Air Force, 1990, $47,000.

14) J.M. Plecnik, "Composite Cable Technology for Bridge Decks," NSF, 1990-1991, $225,000.

15) J.M. Plecnik, "Design of LNG Composite Cylinder for Automobiles," General Motors Corp., 1990, $21,000.

16) J.M. Plecnik, "Composite Cables for Suspended Bridges," NSF, 1992-1996, $300,000.

Research Achievements

1) One of the first researchers in the area of earthquake hazard mitigation by means of rehabilitation and strengthening. Developed new concepts for earthquake damaged concrete structures (epoxy injection) and for unreinforced masonry buildings (center core technique).

2) In Composites Research:

a) The analysis and design of world's first and largest free standing composite stacks (Dart Industries, Xerxes Corp.).
b) The design of the first fiberglass down lead pipes (42' diameter and 1500 ft. deep for OTEC or

Ocean Thermal Energy Conversion Project (U.S. Dept. of Energy, TRW, and Global)

c) The design of large elliptical fiberglass digester units (18 ft. x 30 ft. x 129 ft.) for energy conversion, Santina and Thompson, and U.S. Dept. of Energy).

d) Design of first composite tanker truck to obtain USDOT approval.

JOURNAL PUBLICATIONS

1) Plecnik, J.M., "Optimization of Engineering Systems Using Extended Geometric Programming", a Ph.D. thesis submitted to Ohio State University, 1974.

2) Chen, T.Y. and Plecnik, J.M., "Optimization Algorithm with Engineering Applications", Proc. of the 5th Canadian Congress of Applied Mechanics, May 1975, pp. 683-684.

3) Skiff, R.A. and Plecnik, J.M., "Epoxy Adhesives and Structural Repair", Earthquake Engineering Research Institute Newsletter, Vol. 10, No. 5, Oct. 1976, pp. 35-37.

4) Plecnik, J.M., Amrhein, J.E., Jay. B.H., and Warner, J., "Epoxy Repair of Structures", Proc. of the International Symposium on Earthquake Engineering, St. Louis, Missouri, 1976, pp. 1023-1036.

5) Plecnik, J.M., Amrhein, J.E., Warner, J., and Jay, B.H., "Repair of Earthquake Damaged Concrete Masonry Systems Subjected to Static and Dynamic Loads and Elevated Temperatures", Proc. of the 6th World Conference on Earthquake Engineering, New Delhi, India, 1977, pp. 73-78.

6) Plecnik, J.M., Whitman, W.E., and Cunningham, J., "Dynamic Behavior of Epoxy Repaired Concrete", Proc. of the 6th Canadian Congress on Applied Mechanics, 1977, pp. 115-116.

7) Shipp, John G. and Plecnik, Joseph, M., "Low Temperature Effects on High Strength Bolted Steel Connections", 2nd International Symposium on Cold Regions Engineering, University of Alaska, Aug. 12-14, 1976, pp. 1-2.

8) Plecnik, J.M. and Shipp, J.G., "Bolted Joints on Trans-Alaska Pipeline Structures", ASCE Journal of the Structural Division, Jan. 1977, pp. 87-104.

9) Jakway, W.M., Gerwein, P.H., Whitman, W.E., and Plecnik, J.M., "Epoxy Research", Report No. UCEER-5, Proc. of the 5th National Meeting of the Universities Council for Earthquake Engineering Research. Massachusettes Institute of Technology, Cambridge, Mass., June 23-24, 1978.

10) Plecnik, J.M., Pham, M.G., and Chan, H.C., "Epoxy-Fire Research at California State University, Long Beach", Proc. of the 6th National Meeting of the Universities Council for Earthquake

Engineering Research, University of Illinois, May 1980, pp. 157-160.

11) Plecnik, J.M., Bresler, B., Cunningham, J.D., and Iding, R., "Temperature Effects on Epoxy Adhesives", ASCE Journal of Structural Division, Jan. 1980, pp. 99-113.

12) Plecnik, J.M., Williamson, R.B., Pham, M.G., and Chan, H., "Strength Properties of Epoxy Repaired Structural Components During and After Fire Exposure", 7th World Conference on Earthquake Engineering, Istanbul, Turkey, Sept. 1980.

13) Plecnik, Joseph, M. and Pham, Mai, G., "Preliminary Report on Fire Testing of Epoxy Repaired Shear Walls". Proc. of the 1st US/Japan Seminar on Repair and Retrofit of Structures, Los Angeles, Ca., May 1980, pp. 155-233.

14) O'Connor, E., Plecnik, J.M., Chan, H.M., and Baker, T.E., "Adobe Construction and Its Performance in Southern California", Proc. of International Workshop of Earthen Buildings in Seismic Areas, Vol. I, New Mexico, May 1981.

15) Plecnik, J.M., Whitman, W., Chan, H.M., and Chao, J., "Epoxy Repair Concrete Components Under Fire Exposure", Proc. of the 2nd Us/Japan Seminar on Repair and Retrofit of Structures, Sendai and Tsukuba, Japan, May 1981, pp. 156-188.

16) Plecnik, J.M., Gerwein, P.H., and Pham, M.G., "Design and Construction of World's Tallest Free-Standing Fiberglass Stack", Civil Engineering Magazine, Jan. 1981, pp. 57-59.

17) Plecnik, J.M. and Gaul, R.W., "Adhesives for Structural Repair of Cracks - Their Properties and Limitations", ACI Symposium on Crack Repair, Detroit, Michigan, Sept. 23, 1982.

18) Plecnik, J.M., Bresler, B., Chan, H.M., Pham, M.G., and Chao, J., "Epoxy Repaired Concrete Walls Under Fire Exposure", ASCE Journal of the Structural Division, Vol. 108, No. ST8, Aug. 1982, pp. 1894-1908.

19) Plecnik, J.M.,Chao, J., Baker, T., Kuo, P., and Hsu, T., "Preliminary Report on Experimental Testing of Epoxy Repaired Concrete Beams", Proc. of the 3rd US/Japan Seminar on Repair and Retrofit of Structures, San Francisco, Ca., May 1982, pp. 32-55.

20) Plecnik, J.M., Hsu, T.L., Howard, J., Baker, T.E., and Pham, M.G., "Fiberglass Stacks - Design and Construction", Proc. of the 38th Annual Conference, RP/C of the Society of Plastics Industry, Houston, Feb. 7-11, 1983, pp. 1-3.

21) Plecnik, J.M., Whitman, W.E., Baker, T.E., and Pham, M.G., "Design Concepts for the Tallest Free-Standing Fiberglass Stack", Polymer Composites, July 1984, Vol. 5, No. 3, pp.186-190.

22) Plecnik, J.M., Cousins, T., and O'Connor, E., "Strengthening of Unreinforced Masonry Buildings", Proc. of the Joint US- Italy Conference on Strengthening and Rehabilitation of Masonry Buildings, Rome, Italy, May 9, 1984.

23) Plecnik, J.M., Hiremagalur, J., Howard, J., Baker, T., and Parra, V., "Design of Large Scale FRP Structures for Wind and Seismic Forces", Proc. of the 42nd Annual Technical Conference: ANTEC 84, New Orleans, May 1984, pp. 656-659.

24) Plecnik, J.M., Fogarty, J.H., and Kurfees, J.R., "Behavior of Epoxy Repaired Beams Under Elevated Temperature Exposures and Fires", To be presented at the ACI Symposium on Adhesives, Denver, CO., March 1985, (33 pages).

25) Plecnik, J.M. , Gaul, R.W., Pham, M., Cousings, T., and Howard, J., "Epoxy Penetration", Concrete International, Vol. 8, No. 2, Feb. 1986, (11 pages).

26) Plecnik, J.M., Hiremagalur, J., Howard, J.H., and Short, R., "Design of FRP Tanker Truck for Corrosive Environments for U.S. Dept. of Transportation", To appear in Proc. at the 43rd Annual Technical Conference: ANTEC 85, Washington, D.C., May 1985, (6 pages).

27) Plecnik, J.M., Parra, V., and Howard, J., "Design of FRP Stacks and Tanks for Elastic Buckling Under Seismic and Wind Forces", Proc. of the 40th Annual RP/C Conference of SPI, Atlanta, Georgia, Jan. 28-Feb. 1, 1985.

28) Plecnik, J.M., Howard, J.H., Fogarty, J.H., and Parra, V.S., "Strengthening of Unreinforced Masonry Buildings". Proc. of the 7th International Brick Masonry Conference, Melbourne, Australia, Feb. 17-20, 1985, 6 pages).

29) Plecnik, J.M., Parra, V.S., and Diba, A., "Residual Deflections and Stiffness of Epoxy Repaired Concrete Beams", To appear in Proc. of the 10th Canadian Congress of Applied Mechanics, London, Ontario, Canada, June 2-7, 1985.

30) Plecnik, J.M., Hsu, T.L., Howard, J., Baker, T., and Pham, M., "Fiberglass Stacks - Analysis Concepts", Journal of Polymer-Plastics Technology and Engineering, Vol. 24, 1985, 6 pages.

31) Plecnik, J.M., Short, R., and Plecnik, J., "Composite Tanker Trucks Have Made the Grade", Plastics Engineering, Vol. 41, No. 3, March 1985, pp. 63-66.

32) Plecnik, J.M., Gaul, R., Pham, M., Cousins, T., Howard, J., "Epoxy Penetration", Concrete International, Vol. 8, No. 2, Feb. 1986, pp. 46-50.

33) Plecnik, J.M., Plecnik, J., Parra V., and Diba, A., "Fire-Testing Epoxies", Concrete International, Vol. 8, No. 4, Apr. 1986, pp. 29-33.

34) Plecnik, J.M., Cousins, T., and O'Connor, E., "Strengthening of Unreinforced Masonry Buildings", ASCE Structures Division, Vol. 112, No. 5, May 1986, (18 pages).

35) Plecnik, J.M., Plecnik, J., Fogarty, J.H., and Kurfees, J.R., "Behavior of Epoxy Repaired Beams under Fire", ASCE Structures Division, Vol. 112, No. 4, April 1986, (17 pages).

36) Plecnik, J.M., Diba, A. and Kopparam, V., "Composite Tanker Trucks: Design and Fabrication."

Transportation Research Board, 66th Annual Meeting, Washington D.C., Jan. 12-15, 1987, 8 pages.

37) Plecnik, J. M. and Kopparam, V., "Creep/Relaxation Behavior of Composite Cables," SPI/SPE Plastics West, Las Vegas, Oct. 20-22, 1987.

38) Plecnik, J.M. and Ballinger, C., "Time Dependent Behavior of Composite Cables." Transportation Research Board, 67th Annual Meeting, Washington, D.C. Jan. 18-22, 1988, 6 pages.

39) Plecnik, J.M., Hamoud, A., Kabbara, B. "Fiberglass Deck; Initial Feasibility Study." Transportation Research Board, 68th Annual Meeting, Washington D.C. Jan. 23-28, 1988.

40) Plecnik, J.M., Hamoud, A., Ballinger, C. "Development of High Strength Composite Cables." ASCE Structural Congress 1989. San Francisco, CA May 4-7, 1989, 15 pages.

41) Plecnik, J.M., Azar, W., "Acoustic Emission Studies of Composite Bridge Decks." Transportation Research Board, 69th Annual Meeting, Washington D.C., Jan. 14-17, 1989.

42) Plecnik, J.M., Berg, R., Curcio, J., "Corrosion Mechanisms in Composites." Encyclopedia of Composites, VCH Publishers, New York, Vol. 4, 1990.

43) Plecnik, J., Azar, W., "Composite Highway Bridge Deck Applications." Encyclopedia of Composites, VCH Publishers, New York, Vol. 5, 1990.

44) Plecnik, J.M., Ahmad, S.H., Azar, W., "Static, Fatigue, and Creep Studies on Concrete Beams Post-Tensioned with GFRP Tendons." ASCE Structures Congress, Indianapolis, Indiana, April 29-May 2, 1991.

45) Plecnik, J., Kopparam, V., and Henriquez. O., "Fatigue Behavior of Composite Bridge Decks." ASCE Structures Congress, Indianapolis, Indiana, April 29-May 2, 1991.

46) Plecnik, J.M., Henriquez, O. and Deshpande, R., "Composite Applications in Civil Engineering.' Civil Engineering Magazine, July 1991.

47) Plecnik, Joseph A., Henriquex, Oscar, "Composite Bridges and NDE Applications." Proceedings for Conference on Nondestructive Evaluation of Bridges, Washington, D.C., August 25-27, 1992.

48) Cooper, J., Munley, E., Plecnik, J.M., Henriquez, O.E., "Development of an FRP System for Bridge Deck Replacement." US-Canada-Europe Workshop on Bridge Engineering, Zurich, Switzerland, July 11-15, 1997.

49) Plecnik, J.M., "Thermoset FRP Duct Construction Manual." Sheet Metal and Air Conditioning Contractors National Association (SMACNA), June 1997.

50) Plecnik, J.M., "Applications of Advanced Composites." Bridge Engineering Handbook, Catalog no. 7434, June 1999.

51) Plecnik, J.M., "Design and Evaluation of Fiberglass Tanker Trucks.", 2003 Technical Conference (CFA/ACMA), Las Vegas, Nevada, April 22 to 25, 2003.

52) Plecnik, J.M.and Plecnik Jr., J.M., "Non-Destructive Testing and Evaluation of FRP Products.", 2005 Technical Conference on Construction, Corrosion and Infrastructure (ACMA), Las Vegas, Nevada, March 10, 2005.

MAJOR GOVERNMENT REPORTS AND PUBLICATIONS

The following are major reports to various government agencies on a variety of grants of contracts.

1) J.M. Plecnik, "Final Report to NSF on Epoxy Repaired Structural Elements", NSF Contract No. EMG 75-11292, Aug. 1976, (70 pages).

2) J.M. Plecnik, "Feasibility Study of Fiberglass Pipe System for OTEC-1", Globe Marine-TRW-U.S. Dept. of Energy, 1979, (50 pages).

3) J.M. Plecnik, "Final Report to NSF on Fire Testing of Epoxy Repaired Shear Walls", NSF Contract No. PFR 77-22946, July 1980, NTIS Report No. PB 81-120040, (160 pages).

4) J.M. Plecnik, "Final Report to NSF on Fire Research on Seismically Damaged Concrete Beams Repaired with Epoxy Adhesives", NSF Contract No. PFR-7927222, Aug. 1983, (120 pages)

5) J.M. Plecnik, "Design of Fiberglass Tanker Truck for MC312 Requirements", U.S. Dept. of Transportation, Sept. 1983, (200 pages).

6) J.M. Plecnik, "Investigation of Drydock #1 Floor Capacity Using Deep Beam Theory for Reinforced", U.S. Navy, Long Beach, Ca., Aug. 1983, (40 pages).

7) J.M. Plecnik, "Structural Analysis of the Inboard Shell of the Spare Concrete Caisson for Drydock #1", U.S. Navy, Long Beach, Ca., Feb. 1984, (35 pages).

8) J.M. Plecnik, "Report to NSF on Adobe Research, Phase I", NSF Contract No. CEE-8219343, Oct. 1984, (50 pages).

9) J.M. Plecnik, "Report to NSF on Development of New Technique for Strengthening of Unreinforced Masonry Buildings for Seismic Loading", NSF Contract No. CEE-8211240, Oct. 1984, (60 pages).

10) J.M. Plecnik and S.H. Ahmad, "Transfer of Composites Technology to Design and Construction of Bridges: Interim Report", U.S. Dept. of Transportation, Contract No. DTRS5683-C00043, July 1984, (110 pages).

11) J.M. Plecnik, "Experimental Investigations of as Built Fiberglass Tanker Truck", U.S. Dept. of Transportation, Oct. 1984, (30 pages).

12) J.M. Plecnik, "Transfer of Composite Technology to Design and Construction of Bridges," U.S. Dept. of Transportation, Sept. 10, 1989, (243 pages).

MAJOR INDUSTRIAL REPORTS

The following are reports sent to industry on various university contracts or consulting contracts

1) J.M. Plecnik, W. Jakway, "Design of the 170 ft. High Fiberglass Stack", Dart Industries, Los Angeles, Ca., 1977, (400 pages).

2) J.M. Plecnik, Development of Computerized Composite Material Properties for All Dart Industries, Los Angeles, Ca. Aug. 1977, (500 pages).

3) J.M. Plecnik, "Final Report on the Experimental Investigations of Shell Oil Pipes", Shell Oil Company, Houston, Tx., Dec. 1978 (100 pages).

4) J.M. Plecnik, "Analytical Laminate Properties for all Tanks and Pressure Vessels", Tankinetics, Inc., Westminster, Ca., Oct. 1980, (400 pages).

5) J.M. Plecnik, H. Chan, J. Chao, and A. Diba, "Development of Material Properties for Single Laminar Constructions", Structures Lab Report No. 80-11-5, Tankinetics Inc., Nov. 28, 1980.

6) J.M. Plecnik, "Design of Fiberglass Laminates for Below Ground Vessels for City of Los Angeles", Los Angeles, Ca., 1981, (150 pages).

7) J.M. Plecnik, "Fire Protection for Tanks at the Medical Chemical Corporation", Structures Lab Report No. 81-10-6, Medical Chemical Corp., Santa Monica, Ca., Oct. 27, 1981.

8) J.M. Plecnik, "Experimental Testing on 16 In. Diameter FRP Pipe for Western Electric", Structures Lab Report No. 81-11-7, Xerxes Fiberglass Corp., Nov. 29, 1981.

9) J.M. Plecnik, "Hydrostatic Testing of Two (2) AA-230 Antennas", Structures Lab Report No. 82-2-9, Advanced Composite Products and Technology, Feb. 27,1982.

10) J.M. Plecnik, "Experimental Testing of Fiberglass Samples from Fluor Tanks", Structures Lab Report No. 82-3-6, Fluor Corp., March 22, 1982.

11) J.M. Plecnik, "Design of Large Diameter FRP Ducts for Fiber Fab", Structures Lab Report No. 82-9-6, Fiber Fab, Pheonix, Az., Sept. 27, 1982.

12) J.M. Plecnik, "Analytical Laminate Properties for Tank and Stack Laminates", Quality Fiberglass, Inc., Compton, Ca., 1982, (100 pages).

13) J.M. Plecnik, J.J. Howard, "Foam Properties for False Bottom Tanks: Above Ground and

Vertical", Structures Lab Report No. 82-7-7, Xerxes Fiberglass Corp., July 15, 1982.

14) J.M. Plecnik, "Experimental Studies on C-Veils Used at Xerxes-Anaheim Plant", Structures Lab Report No. 82-10-9, Xerxes Fiberglass Corp., Oct. 26, 1982.

15) J.M. Plecnik, "Design of an Elliptical Tank for Digester Systems", Santina and Thompson Engineers, Concord, Ca., 1982-1983, (120 pages).

16) J.M. Plecnik, "Design of FRP GACO Decarbonator", Structures Lab Report No. 83-12-11, Dec. 19, 1983.

17) J.M. Plecnik, "Design of 18 in. Diameter Pressure Vessel", Structures Lab Report No. 83-12-4, Occidental Petroleum-Methane Drainage Ventures, Dec. 19, 1983.

18) J.M. Plecnik, "Design of 24 in. Diameter Pressure Vessel", Structures Lab Report No. 83-12-3, Occidental Petroleum-Methane Drainage Ventures, Dec. 19, 1983.

19) J.M. Plecnik, "Design of 30 in. Diameter Horizontal Pressure Vessel", Structures Lab Report No. 83-12-5, Occidental Petroleum-Methane Drainage Ventures, Dec. 19, 1983.

20) J.M. Plecnik, "Design of Steel Skid for Arrowhead Industrial Water", Structures Lab Report No. 83-12-2, Arrowhead Industrial Water, Dec. 12, 1983.

21) J.M. Plecnik, "Design of Carbon Absorber Vessel", Structures Lab Report No. 83-12-3, Harrington Industrial Plastics, Dec. 19, 1983.

22) J.M. Plecnik, "Design of FRP Degasifier", Structures Lab Report No. 83-12-7, Arrowhead Industrial Water, Dec. 19, 1983.

23) J.M. Plecnik, "Gapping Tests for Polyurethane Joint Sealent 227-U-SRG", Structures Lab Report No. 83-8-8, Advanco, Los Angeles, Ca., Aug. 18, 1983.

24) J.M. Plecnik, "Experimental Testing of 18 in. and 30 in. Diameter FRP Launders", Structures Lab Report No. 83-1-2, Xerxes Fiberglass Corp., Jan. 14, 1983.

25) J.M. Plecnik, "Head to Shell Joint Designs for Automatic Power Inc. Fiberglass Buoy", Structures Lab Report No. 83-8-3, Aug. 22, 1983.

26) J.M. Plecnik, "Design of 24 in. Diameter Pressure Vessel for CAL-BIO-CHEM", Structures Lab Report No. 83-9-3, Sept. 5, 1983.

27) J.M. Plecnik, "Experimental Testing of Polyurethane Joint Sealent (227-U-SRG)", Structures Lab Report No. 83-8-4, Advanco, Aug. 11, 1983.

28) J.M. Plecnik, "Experimental and Analytical Studies of FRP Ducts (Large Diameter) as Manufactured by Fiber Fab", Structures Lab Report No. 83-1-2, Fiber Fab, Pheonix, Az., Jan. 6, 1983.

29) J.M. Plecnik, "Determination of Moduli for Continuous Filament Roving (225 yield) as

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Manufactured by Wallace-Murray Corp. Structures Lab Report No. 84-6-5. Wallace-Murray Corp., June 17, 1984.

30) J.M. Plecnik, "Experimental Testing of ACPT Radome #4", Structures Lab Report No. 85-5-8, Advanced Composite Products and Technology, Aug. 3, 1984.

31) J.M. Plecnik, "Design of United Energy Pipe Header System", Structures Lab Report No. 84-1-1, Jan. 12, 1984.

32) J.M. Plecnik, "Shell Theory Solutions for Xerxes Underground Tanks (Final Report)", Structures Lab Report No. 84-5-3, Xerxes Fiberglass Corp., May 22, 1984, (200 pages).

33) J.M. Plecnik, "Design of 5 ft. Diameter Sump Tanks for Quality Fiberglass", Structures Lab Report No. 84-8-2, Quality Fiberglass, Aug. 8, 1984.

34) J.M. Plecnik, "Design of 6 ft. Diameter Sump Tanks for Quality Fiberglass", Structures Lab Report No. 84-8-3, Quality Fiberglass, Aug. 8, 1984.

35) J.M. Plecnik, "Experimental Analysis of 1/2 Inch Thick Unidirectional Laminate", Structures Lab Report No. 84-8-5, Orcon Corp., Union City, Ca., Aug. 7, 1984.

36) J.M. Plecnik, "Experimental Analysis of 3/8 Inch Thick Unidirectional Laminate", Structures Lab Report No. 84-8-4, Orcon Corp., Union City, Ca., Aug. 7, 1984.

37) J.M. Plecnik, "Experimental Testing of 1/8 Inch Thick Unidirectional Laminates", Structures Lab Report No. 84-10-2, Orcon Corp., Union City, Ca., Oct. 3, 1984.

38) J.M. Plecnik, "Design of 10 ft. Diameter FRP Stack", Structures Lab Report No. 84-6-3, Xerxes Corp., June 19, 1984.

39) J.M. Plecnik, "Hydrostatic Testing of Composite Radome", Structures Lab Report No. 84-3-6, Advanced Composite Products and Technology, March 26, 1984.

40) J.M. Plecnik, "Analysis of United Energy Pipe Systems for Vacuum of 13.7 psi", Lab Report No 84-2-3, Feb. 22, 1984.